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ABSTRACT

The study involving two low achieving first graders was designed to develop a remediation strategy offering increased opportunities for student responses through the rearrangement of skills and the teaching format. Four questions were addressed: What are the effects of the rearrangement of skills and the teaching format in the Ginn 720 Reading Series on the behavior of the teacher with respect to the delivering response opportunities to each student? To what extent did these changes result in rates of response opportunities above those recommended in the Ginn Program? What are the effects of restructuring on the students' rate and correct responding? What are the effects of restructuring on reading achievement as measured by biweekly criterion tests? Treatment objectives consisted of skill reorganization which involved identifying subskills in two of Ginn's core skills areas--vocabulary and decoding--and developing a more streamlined composite sequencing, an increased teacher presentation rate which facilitated practice of each response, and an error correction procedure which was designed to allow positive practice of correct responses. Teacher behavior, as measured in the delivery of response opportunities to each student, rose dramatically during treatment phases. Correct responding by students increased from baseline to treatment proportionately with increased response opportunities. Correct academic responses in comprehension decreased proportionately with teacher presented response opportunities. (SB)

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Rearranging the Instructional Format to Increase Opportunity to Respond in the Basal Reading Series with Minority Children

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INTRODUCTION

Research findings have reported success in establishing methods which increase academic performance in reading as well as in other subject a.eas. Most commonly consequence events have been systematically arranged to increase academic performance. The use of positive reinforcement in the form of social, token, tangibles and activities or a combination have been prevalent in the literature. Token systems have often been employed and proved to be most powerful probably due to the variety of "back ups" used which are reinforcing to large numbers of students. Acceleration of correct responding and rates of responding in reading have been accomplished with token systems (Staats & Butterfield, 1965; Whitlock & Bushell, 1967; Staats, Minke, Goodwin, & Landeen, 1967; Wolf, Giles, & Hall, 1968; Gray, Baker, & Stancyk, 1969; Haring & Hauck, 1969; Lovitt, Eaton, Kirkwood, & Pelander, 1971; Sulzer, Hunt, Ashby, Koniarski, & Krams, 1971; Lahey, McNees, & Brown, 1973; and Lahey, & Drabman, 1974). In the preceding studies word acquisition, oral reading rate, and the number of comprehension questions answered correctly are examples of reading behaviors measured.

Other studies have identified a key variable, frequent academic responding, and its relationship to student performance. Massad and Etzel (1972) found that frequent responding was a more critical variable than frequent reinforcement for more rapid acquisition while teaching phonics to preschool students. These students learned more rapidly and made fewer errors with increased levels of responding, than with high levels of reinforcement. Broden, Copeland, Beasley and Hall (1977) increased verbal responding in a junior high special education class simply by changing the type of questions asked and by giving instructions to students to answer in a complete sentence. Other techniques which have resulted in increases in academic responding are demonstrated by

several investigators: (1) an increased pace of teacher presentation rate (Carnine, 1976); (2) programmed instruction (Becker, 1978; Gray, et al., 1969); and (3) increased instructional time in a subject area afforded by adult or peer tutors (Broden, Beasley, & Hall, 1978; Delquadri, 1978).

With increased levels of academic responding, accuracy is another important variable related to acquisition of academic skills. The manipulation of antecedent events has been shown to produce dramatic increases in response rate and accuracy. Lovitt and Curtiss (1968) and Carnine (1976) have employed instructional methods which increased accurate responding. In the former, the authors required student verbalization of mathematics problems before writing a response and reported significant increases in correct responding with reductions in error variability. In the latter, the author demonstrated that faster teacher presentation rates decreased students' off-task behaviors and increased participation and correct responding.

Recently the research at Juniper Gardens Children's Project has involved studies which also show a relationship between active academic responding and student performance. Currently, research goals are focused upon the identification of other techniques which increase student responding. This research direction served as the impetus for the present study.

Purpose: The purpose of this investigation was to develop a remediation strategy which offered increased opportunities for student responding focusing on reading materials and the teaching format. Specifically four questions were addressed in this study.

1. What are the effects of the rearrangement of skills and the teaching format in the Ginn 720 Reading Series on the behavior of the teacher with respect to delivering response opportunities to each student.
2. To what extent did these changes result in rates of response

opportunities above those recommended in the Ginn Program?

3. What are the effects of restructuring on the students' rate and correct responding?
4. What are the effects of restructuring on reading achievement as measured by biweekly criterion tests?

METHOD

Subject and Setting

The target students were two low achieving first graders in an elementary school located in a low socioeconomic area of Kansas City, Kansas. Both students were selected by their classroom teacher because of reading skill deficits and slow progression through reading materials. The students, one male and one female, comprised the lowest reading group in the classroom and received group instruction for approximately 20 min a day. The male student also received remedial reading instruction from a Title I teacher for 40 min per day on randomly selected skills. Reading grade placements on the Wide Range Achievement Test were 1.4, 39 percentile, for the female student and 1.5, 42 percentile, for the male; and I.Q. scores were 81 and 89 respectively on the Otis Lennon. The subjects began receiving instruction from the Ginn 720 Reading Program, Level 2 (beginning first grade level), in October of the school year and remained at that level through the latter part of February when the experimenter first entered the classroom. Group instruction was conducted at a reading table located at the front of the room while the other class members completed independent reading seatwork assignments.

Reading Program

The Ginn 720 Reading Program is designed for flexibility in the adaptation of the program for classroom usage. The series is sequentially developed and encompasses Levels 1 through 13. Each level is divided into units providing

a variety of instructional and practice exercises in each of seven skill areas: (1) vocabulary; (2) decoding; (3) comprehension; (4) creativity; (5) study skills; (6) literature; and (7) Language Development. Instruction follows either a Seven Strand Model offering instruction, application and enrichment in all seven skill areas or a core skill model emphasizing only vocabulary, decoding, and comprehension depending on student needs. A management component is included offering assessment (Unit and Level Tests) reinforcement (extra practice activities) and enrichment exercises.

The structure of Ginn units within each level follows a set pattern. First new vocabulary words are introduced followed by a story for contextual reading. A series of skill activities follow in the core skill areas in addition to other exercises in the enrichment strands as well. After each new skill is introduced three practice activities follow spaced throughout the units.

Level coverage suggested by Ginn for Grade 1 included completion of Levels 2 through 5 for the average learner in contrast to Levels 2 through "maybe" 4 for slow learners.

Behavioral Measures

Event recording was used to record each incidence of the target behaviors during the daily 20 min reading group period. Teacher behavior recorded was the number of response opportunities provided to each subject. Response opportunity was defined as an event in which the subject was given the opportunity to respond, in a group or individually, to teacher directed questions or commands in the core skill areas. Response opportunities could be either verbal or gestural in nature. For example, verbal response opportunities involved questions such as, "Mary, what is the new word which begins the same as ball?"; or commands such as, "Let's read the list of new words together."; or "John, repeat the new word after me." Gestural response

opportunities were given by a nodding of the teacher's head in the direction of the appointed student or pointing to the student in conjunction with a verbal command such as, "John, read next.". In the event of an open-ended question, one which was not directed to any particular student, teacher acknowledgement of the response was used to determine the response opportunity given to one, the other, or both subjects such as, "Good, Debra you're right."; "Excellent John."; or "Good for you two."; or "Right." in response to answers given by the students.

Student behaviors recorded were the number of correct academic responses and the frequency of questions in which there was no response. Correct academic responses were defined as, all responses followed by teacher statements indicating correctness of the response such as, "good", "that's right", "nice reading", etc. A no response score was tallied for response opportunities in which the student failed to provide an answer to a teacher question. No response was also recorded in the event the teacher herself provided the correct response, and/or directed the question to another student.

In addition, measurement of permanent products was used to record written response opportunities given by the teacher/materials, and written correct academic responses by the students. For each measure, oral and written response opportunities or correct academic responses were combined and totals were used for data in Figures 1 through 3.

A third measure was used to tally the number of response opportunities suggested by the Ginn Teacher's Manual for each student. Response opportunities suggested by Ginn were defined as events in which the teacher's manual required the teacher to direct questions or commands to the students requiring a response in the core skill areas. Each required response was counted as one, and each word to be read in context was recorded as one. Ginn's suggested response

opportunities were recorded during the baseline phase only.

A fourth measure consisted of an Experimenter designed criterion test which was used to observe effects on reading achievement. The criterion test consisted of randomly selected samples from unit tests in each of the core skill areas of Levels 3 and 4 (three units each). The test was given as a pre and post baseline measure and then was administered on a biweekly basis through the remainder of the experimental conditions.

Reliability

The Experimenter served as primary observer throughout the study. Another observer record was also used to make independent and simultaneous observations on three days during each phase of the study on all daily or repeated measures. Observer agreement was computed by dividing the smaller total by the larger and multiplying the quotient by 100. Mean percent agreement for all phases of the experiment is shown in Table 1.

Insert Table 1 About Here

Design

A multiple baseline design across the three selected reading behaviors, vocabulary, decoding, and comprehension, was used to determine the effects of restructuring the Ginn program on rate of teacher presented response opportunities and correct academic responses of the students. The third baseline, established on comprehension responses, served as a control measure. No restructuring was applied to this area. Comprehension responses were simply recorded. A kitchen timer, set at 20 min, was used to maintain constant session time across all experimental conditions and phases of the study.

Procedures

Treatment objectives were threefold and consisted of: (1) skill reorganization which involved identifying subskills in two of Ginn's core skill areas, vocabulary and decoding, and developing a more streamlined composite sequencing; (2) an increased teacher presentation rate which facilitated practice of each response; and (3) an error correction procedure which was designed to allow positive practice of correct responses.

Restructuring Ginn. Prior to implementing experimental conditions, the Experimenter reorganized Ginn's core skills of vocabulary and decoding to be taught within two levels, a total of six units. Coverage of the designated units would have upgraded the targeted subjects to the approximate level suggested by Ginn for the "slow learner". The reorganization of skills involved: (1) combining vocabulary and phoneme/grapheme correspondences into larger groupings presented on instructional lists; (2) outlining practice tasks for each list; and (3) including number of practice trials per list and a mastery criterion. Vocabulary words were sequenced in instructional lists, 1 through 16, in Ginn's same order except that vocabulary words from more than one unit were combined to allow for six to nine new words per list depending upon the addition of plural "s" and verb inflection "s" forms of the words. These additional forms of the words were included due to their inclusion by Ginn within the two levels to be covered. Vocabulary subskills were identified in Ginn as word discrimination, word recognition, and contextual reading. In the decoding skill area all initial, medial, and final phonemes to be presented within the target units were sequenced in instructional lists to include vowels on one and consonants distributed among four other lists for a total of five consisting of four to five phonemes in each list. Decoding subskills were identified as sound/symbol associations and sound blending. Practice tasks

were outlined in each subskill area to be completed with each vocabulary and decoding list. Practice trials were set for a maximum of four with three consecutively correct trials demonstrating mastery.

Teacher pacing. The reorganization of the teaching format included an increased teacher presentation rate accomplished by devising a cycle involving presentation of the stimulus material, a correction procedure for errors and reinforcement. A specific instructional format was devised in order to accomplish this acceleration and to provide step by step instructions for the teacher to follow. A presentation cycle was structured for daily vocabulary and decoding skill practice (See Appendix A). Since skill areas were comprised of five subskill areas (i.e., word discrimination, word recognition, contextual reading, sound/symbol identification, and sound blending), these procedures varied slightly. The general procedure was: (1) the teacher presented the first word from an instructional word list; (2) the student responded; (3) the teacher reinforced a correct response; (4) in case of student error, a correction procedure followed consisting of the teacher modeling the correct response, and the student repeating the response two times; and (5) the teacher moved to the second word on the list and repeated the procedure until all words had been presented. After completion of List #1, two to three more trials were offered on the same list. Two days before implementing each experimental procedure the teacher read typewritten instructions. Later the teacher and Experimenter discussed the procedures and roleplayed each task several times until the teacher became comfortable with the format.

Phases

Baseline. During baseline reading instruction time for the students followed a set daily procedure established by the teacher. A vocabulary review was completed by the two students who responded alternately in reading a list

of all previously introduced words from a chart or in the back of the student text. Next, a cummulative review of initial consonants was conducted by the teacher who named a word, and the student responded by naming the letter making the intitial sound. Intermittently stars were given for correct responses by the teacher. In the case of incorrect responses or no responses the teacher cued the students by asking them to spell the target word or to listen to a series of words beginning with the same sound. If the students were still unable to make a correct response, the teacher either gave the correct answer or modelled the correct response. Sometimes the teacher had one, the other, or both students then repeat it correctly.

The remaining time, 10 min, was spent on the new lesson in Ginn which included one to two activity pages of the teacher's manual. The teacher introduced the new skill through lecture or discussion using the chalkboard to show examples while the students practiced the skill orally or in writing. Core skills and enrichment exercises included in each Ginn unit were taught following the sequence provided in the Ginn teacher's manual. This provided the students with practice in each skill, however, in an alternating skill practice pattern. An adherence to the Ginn manual for daily instruction provided an up and down level of practice in each skill area and a back and forth movement from skill to skill. Also, no mastery criterion was included to minimize additional practices on mastered material.

Restructured vocabulary. The vocabulary treatment procedure spanned 32 days and consisted of three tasks (1) word discrimination, (2) word recognition, and (3) oral reading practice. Task 1, word discrimination, was the first vocabulary task and involved the student pointing to and repeating the target words read by the teacher from a specific instructional list. Each target word was presented on an 8½" by 11" sheet with two other words with

similar initial, medial or final phoneme/grapheme characteristics. Three to four trials were provided for each student. However, target words were presented on four separate sheets in four different arrays to provide a new array for each trial (example: (1) eats, ears, cats; (2) cats, ears, eats; (3) eats, cats, ears, (4) cats, eats, ears). Teacher pacing followed the same general outline.

Task 2, word recognition, immediately followed Task 1 and also involved the use of words from List 1 printed on 2" by 4" flash cards. A preliminary procedure was used to teach correct pronunciation of each word. The Experimenter instructed the teacher to model each word, and have the student repeat each word of the list two times. Next, in random order, the teacher flashed the word cards, and the student read each word. Three to four trials through the list were provided for each student. Again, teacher pacing followed the same general outline.

In Task 3, oral reading practice, the teacher was instructed to present a story from the text to allow the students to practice reading the vocabulary words in context, thus establishing a correlation between words on the word list and words in the oral reading task. For each word list a matching story was presented for the task, and students practiced reading orally in the remaining time after completion of Tasks 1 and 2. On the day that the student mastered Task 2, word recognition, the teacher recorded correct and incorrect responses during the oral reading practice by underlining the first letter of each word correctly pronounced, crossing out the first letter of each word mispronounced, crossing out the first letter and underlining the second letter for words mispronounced, then corrected by the student, and underlining the first letter and crossing out the second for words pronounced correctly then mispronounced (Jastak, Bijou, & Jastak, 1965). If oral reading proceeded without

errors, this task was considered mastered. If errors were made during this task, all error words were included in a review list which was used prior to the next numbered list with Task 2, word recognition, and Task 3, oral reading practice, on subsequent days until mastery of the review list was demonstrated. Teacher pacing involved: (1) the teacher instructing a student to being reading; (2) the student responding; (3) the teacher reinforcing with verbal praise for each page completed; (4) the teacher correctly modeling errors followed by the student repeating the correct response twice; and (5) the teacher stopping the student at the end of his/her time limit, and instructing the next student to begin reading.

For each vocabulary task the student was instructed on vocabulary List 1, and progressed through Lists 1 - 16 following a demonstration of mastery. Criterion for mastery on each list for the word discrimination task and the word recognition task was set at 100% correct for three consecutive trials. Only one list was presented per day with the three specific practice tasks to be performed. Three to four trials were given per task depending upon the extent of mastery after each trial. If the tasks were not mastered, the student was presented with the same list the following day and repeated the practice tasks until criterion was reached. A continuous reinforcement schedule was used for correct responses in each vocabulary task except oral reading. Reinforcement consisted of verbal praise and stars or bunnies contingent upon a correct academic response. Stars or bunnies were stamped by the teacher on separate student vocabulary sheets immediately following correct responses.

Restructured decoding. The decoding treatment procedure continued for 14 days and consisted of two practice tasks, identification of phoneme/grapheme correspondences in the initial, medial, or final positions and sound blending of words with common structural regularities. A preliminary procedure was used,

prior to the first task, in order to teach correct sound pronunciation. The teacher was instructed by the Experimenter to hold up a grapheme on 2" by 2" card and name the corresponding phoneme in addition to a word containing the sound (example: "b as in ball"), and to ask the student to repeat the sound only two times. For Task 1 the grapheme cards were flashed by the teacher, and the student was then required to name the corresponding phoneme. The teacher flashed each phoneme on the decoding instructional List 1, then repeated the list of phonemes for two to three more trials. An instructional procedure given prior to Task 2 involved sound blending using the 2" by 2" phoneme/grapheme cards and an 8½" by 11¼" pocket chart identifying the structural components of the group of words to be decoded. The teacher constructed words of a particular pattern (example: CVC-Consonant-Vowel-Consonant), and the student blended the sounds and named the words. Four words for each chart were decoded in this fashion. After sound blending practice with the patterned pocket chart words, the student began Task 2 which involved blending sounds and naming the five words of a particular word pattern printed on an 8½" by 11" sheet. In random order the student was required to blend the sounds and name the words on the list for three consecutive trials at 100% accuracy. As in the vocabulary tasks, the students began instruction on decoding List 1, and progressed through the lists following a demonstration of mastery. Criterion for mastery on each list for Task 1 and 2 was set at 100% correct for three consecutive trials. Only one list with the specific practice tasks to be performed was presented per day. As in the vocabulary tasks, three to four trials per list were conducted depending upon the extent of mastery after each trial. If the tasks were not mastered, the student was presented with the same list on the following day and required to repeat the practice tasks until criterion was met. Teacher pacing followed the same cycle as in vocabulary Tasks 1 and 2. Daily, in

alternate order, the two subjects completed the two tasks.

RESULTS

Results for Teacher Response Opportunities

The number of response opportunities provided by the teacher to Subject 1 are presented in Figure 1. These data showed an increase in the number of response opportunities for this student over the baseline level. On the average Subject 1 received 36.8 response opportunities in vocabulary during baseline with a range of 0 to 80. This increased by a factor of 3 to a mean of 116.3 during the restructured vocabulary phase with a range of 35 to 243. Similar effects were noted in decoding. During baseline the mean number of decoding response opportunities given was 15.9, ranging from 0 to 116. This quadrupled to a mean of 68.9 (range, 44 to 84) during restructured decoding. Response opportunities in comprehension was used as a control. For purposes of this study the mean number of opportunities to respond to comprehension items in the first 26 sessions was compared to the mean number in the last 26 sessions. The mean for the first half was 6.7, range 0 to 25. In the second half the average number of response opportunities decreased to 1.9, range 0 to 10. Subject 2 showed similar results.

Insert Figure 1 About Here

Results for Ginn's Suggested Response Opportunities

The number of opportunities to make responses suggested by the Ginn teacher's manual are presented in Fig. 2 for the baseline phase only. Opportunity to respond in the area of vocabulary had a mean of 79 with a range of 0 to 287. The mean number of response opportunities suggested by Ginn in decoding was 33.6 with a range of 0 to 168. There was a mean of 13.5 oppor-

tunities to respond to comprehension items with a range of 0 to 29 for the first half of the sessions.

The Ginn data in both skill areas showed a great degree of variability. For purposes of comparability the mean number of response opportunities provided by the teacher during baseline and restructured Ginn are represented by a mean line in each phase. In the area of vocabulary the teacher provided Subjects 1 and 2 approximately half of the opportunities to make responses suggested by the Ginn manual during the baseline phase. The mean number of response opportunities provided Subject 1 was 36.8 and to Subject 2 was 40.5. This compared to Ginn's suggested mean number of 79. In the restructured vocabulary phase both subjects received a mean number of response opportunities higher than Ginn's suggested mean level, 116.3 for Subject 1 and 79.2 for Subject 2.

As with vocabulary, the teacher gave fewer response opportunities in decoding to each subject during the baseline phase than the number suggested by Ginn. Ginn's mean number of response opportunities was 33.6 compared to a mean of 15.9 provided Subject 1 and a mean of 16.3 provided Subject 2. During the restructured decoding phase both subjects received a mean number of response opportunities higher than Ginn's suggested mean level (68.9 for Subject 1 and 66.6 for Subject 2).

Similarly in the area of comprehension lower levels of response opportunities were provided to each subject than Ginn's suggested level during the first half of the sessions. However, in the second half of the sessions instead of an increase in response opportunities over Ginn's suggested level, this control area showed an even lower level of response opportunities provided to each subject. During the first half Subject 1 had a mean number of response opportunities of 6.7 and Subject 2 had 5.6. This can be compared to

Ginn's suggested mean level of 13.5. This later half showed even lower levels of response opportunities (1.9 for Subject 1 and 1.7 for Subject 2).

Insert Figure 2 About Here

Results for Accuracy

Figure 3 shows the effects of increased response opportunities on answering correctly. An analysis of the changes in terms of the probability of correct academic responses during the baseline and restructured phases for Subject 1 is shown. Probability of correct responses showed a more stable trend during treatment compared to the variability shown during baseline. The data were derived by dividing the total correct academic responses by the total response opportunities given in each session. This provided a ratio of the two events or a probability of correct responses. For Subject 1 during the vocabulary baseline a mean probability score of .91 correct responses was computed with a range of .67 to 1.00. Restructured vocabulary showed a mean probability score of .91 correct responses with a range of .82 to .97. In the decoding baseline the mean probability score was .82 with a range of .64 to 1.00. This rose slightly to .81 during restructured decoding with a range of .66 to 1.00. The mean for the first half of comprehension sessions was .90, range .73 to 1.00. A decrease in the second half showed a mean of .75, range .40 to 1.00. Results for Subject 2 were similar.

Insert Figure 3 About Here

Results on Reading Achievement

Figure 4 presented the results of the Experimenter devised criterion test

which was given pre and post baseline and on a biweekly basis during treatment to check for achievement gains. As can be seen, the mean percent of items correct on the test increased for both subjects over baseline levels. Subject 1 had a 3% drop in vocabulary skills between pre and post baseline testing for 13 days of instruction versus a 14% gain by the end of treatment covering 50 days of instruction. This represented a -.002 daily gain in baseline versus +.005 daily gain in treatment which was computed by dividing the percentage by the number of days of instruction. The baseline mean percent correct score in vocabulary was 76.5 and rose to a mean of 83.3 during restructured vocabulary. A baseline gain of 15% in decoding was made by Subject 1 over 28 days of instruction compared to a gain of 9% by the end of restructured decoding for 12 days of instruction. This represented a +.005 daily gain in baseline versus a +.008 daily gain in treatment. The baseline mean percent correct score was 62% which increased to 76% during treatment. Comprehension mean percent correct for the first half of the sessions was 53 and increased to a mean of 65 for the latter half.

Insert Figure 4 About Here

Somewhat dissimilar effects were displayed by Subject 2 on the achievement measures. This student had a 10% gain in vocabulary skills between pre and post baseline testing for 13 days of instruction versus a 14% gain by the end of treatment covering 32 days of instruction. This represented a +.007 daily gain in baseline which dropped to +.005 during treatment. The baseline mean percent correct in vocabulary was 59 and increased to a mean of 69 during restructured vocabulary. A baseline gain of 14% in decoding was indicated for Subject 2 over 27 days of instruction compared to a negative gain of 5% by

the end of restructured decoding for 14 days of instruction. This represented a +.005 daily gain in baseline versus a -.003 daily gain in treatment. However, the baseline mean percent correct score was 49.3 which increased to 52 during treatment. Comprehension mean percent correct for the first half of the sessions was 31.5 and increased to a mean of 61.5 for the latter half.

DISCUSSION

Through a kind of engineering process, the experimenter sought to systematize the learning tasks and skill presentation to allow high levels of consistent daily practice in each skill area. Teacher behavior, delivering response opportunities to each student, rose dramatically during treatment phases. The new procedures provided for increased levels of responding because the teacher directed and paced the reading session, while the students engaged in active responding during the majority of the 20 min allowed time.

Student behavior, correct responding, increased from baseline to treatment proportionately with increased response opportunities. Correct academic responses in comprehension decreased proportionately with teacher presented response opportunities. It was established that with increased levels of responding, responding correctly was not significantly increased. However, a more stable level of making correct responses from day to day was achieved. Since the students were previously displaying high levels of correct responses, it was noted that the treatment did not effect this variable adversely, thus maintaining the existing level at baseline. The probability scores for correct responding showed that variability reduced from baseline to treatment and was more stable during the treatment phases, thus resulting in a more consistent

pattern of correct responding.

An examination of Figure 1 in conjunction with Figure 8 showed that low levels of response opportunities were provided in the comprehension skill area although a rather large gain occurred on the criterion test for comprehension. If one considered the fact that teacher provided response opportunity levels in comprehension maintained a low steady level throughout the experiment, then the data suggested that training in vocabulary and decoding may have facilitated acquisition in comprehension as well. A replication of this experiment should be designed in order to determine whether this generalization effect was valid.

The inclusion of a reinforcement system as part of the treatment package was due to the teacher's previous use of social reinforcement and stars in her instructional program. The teacher showed a great degree of adeptness in delivering reinforcement during normal teaching procedures, and although rate of reinforcement was not measured, it appeared to be at sufficient levels on most days to maintain correct responding at acceptable levels. Subject 2, however, was extremely disruptive and additional reinforcement was often needed in order to maintain his attending during the reading group period. During the treatment phase the Experimenter systematized the teacher using a continuous schedule for correct responses. This was done in order to maintain correct responding by both students and to increase attending by Subject 2.

Subject 1 showed higher daily gain rates on the achievement measure (Fig. 8) if contrasting baseline to treatment phases, while Subject 2 displayed somewhat dissimilar effects. In vocabulary and decoding baseline daily achievement gains for Subject 2 were higher than those shown during treatment. Two factors may be related to the differences shown: (1) Subject 2 progressed at a slower rate through the instructional lists; and (2) his level of responding was consistently lower than exemplified by Subject 1. The student

often had difficulty reaching criterion set at three consecutively correct trials per list at 100 percent accuracy. Thus, often times his daily level of responding was minimized and progression slowed due to instruction the following day on the same vocabulary or decoding list. Also, beginning with the fifth day of vocabulary treatment the number of response opportunities provided to Subject 2 began to decrease due to the student's refusal to respond to unknown items, thus some of the allotted instructional time was lost. Additional reinforcement was then instituted on Day 8 of treatment which consisted of a star or bunnie combined with praise for any response and a second star or bunnie with praise for a correct response. This change in reinforcement affected an increase in the number of response opportunities by Subject 2. This higher level was generally maintained during the remaining days of treatment.

An examination of the data depicting response opportunities suggested by the Ginn Teacher's Manual showed a variable and inconsistent pattern of response opportunities similar to those actually provided to each student by the teacher. Of course, the similar pattern of the two measures was attributable to the teacher's reliance on the teacher's manual for an instructional format. Dissimilar aspects were due to the teacher's variation from the manual in method of presenting some skills. In baseline the teacher provided a mean number of response opportunities which were fewer than the number prescribed by Ginn for each skill area. In contrast, the data during treatment phases demonstrated that the teacher provided a much higher level than the baseline level suggested by Ginn. The Experimenter questioned whether Ginn's suggested level of response opportunities was sufficient to insure high achievement levels by all students. As observed, higher levels of response opportunities produced higher levels of achievement as evidenced by the

achievement data for Subject 1 and Subject 2. This suggested that the reading series' level of prescribed response opportunities must only be used as a guide, and that most students would benefit from higher levels of response opportunities even though the extra amount must be varied from student to student.

As demonstrated, the procedures developed for this study were very productive in terms of teacher application and student outcomes in selected reading behaviors. However, refinement of the procedures in order to determine other aspects of the treatment effect and to improve smooth implementation of the procedure with more teachers and students remain for future research.

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APPENDIX A

GENERAL PACING THROUGH

INSTRUCTIONAL TASKS

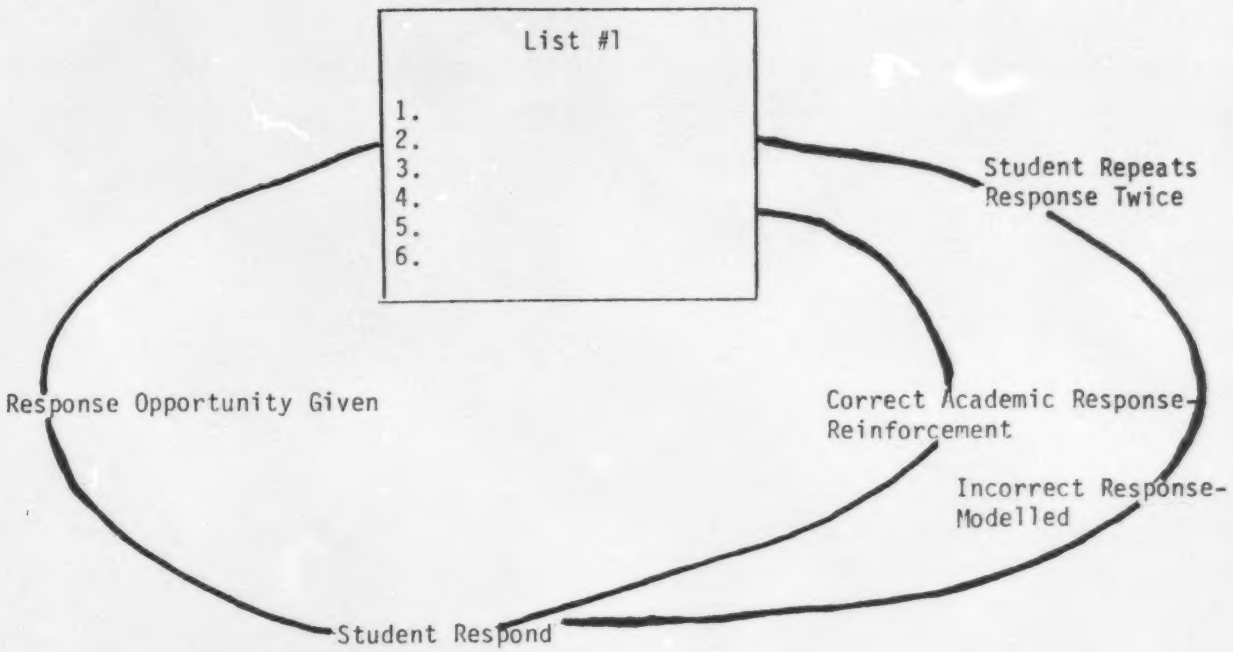

Table 1

Mean Percent Interobserver Agreement

	Subject	Vocabulary	Decoding	Comprehension
Baseline				
Response opportunities given by teacher	1	88%	84%	100%
Correct academic responses	1	85%	88%	100%
Response opportunities given by teacher	2	80%	83%	100%
Correct academic responses	2	86%	86%	100%
Response opportunities given by Ginn		91%	93%	100%
Restructured vocabulary				
Response opportunities given by teacher	1	95%	87%	84%
Correct academic responses	1	93%	86%	89%
Response opportunities given by teacher	2	91%	87%	84%
Correct academic responses	2	88%	86%	80%
Response opportunities given by Ginn			95%	97%
Restructured decoding				
Response opportunities given by teacher	1	99%	88%	100%
Correct academic responses	1	97%	93%	100%
Response opportunities given by teacher	2	95%	90%	100%
Correct academic responses	2	91%	89%	100%

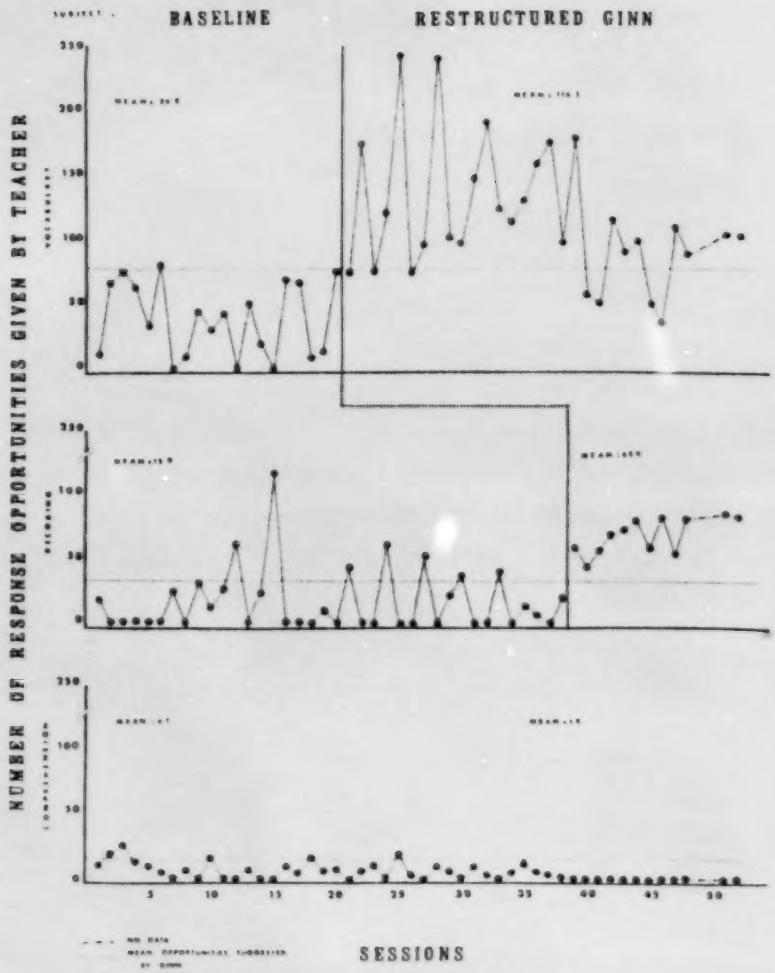

Figure 1. Subject 1's record of the number of response opportunities provided by the teacher in three reading behaviors during a 20 min reading group session.

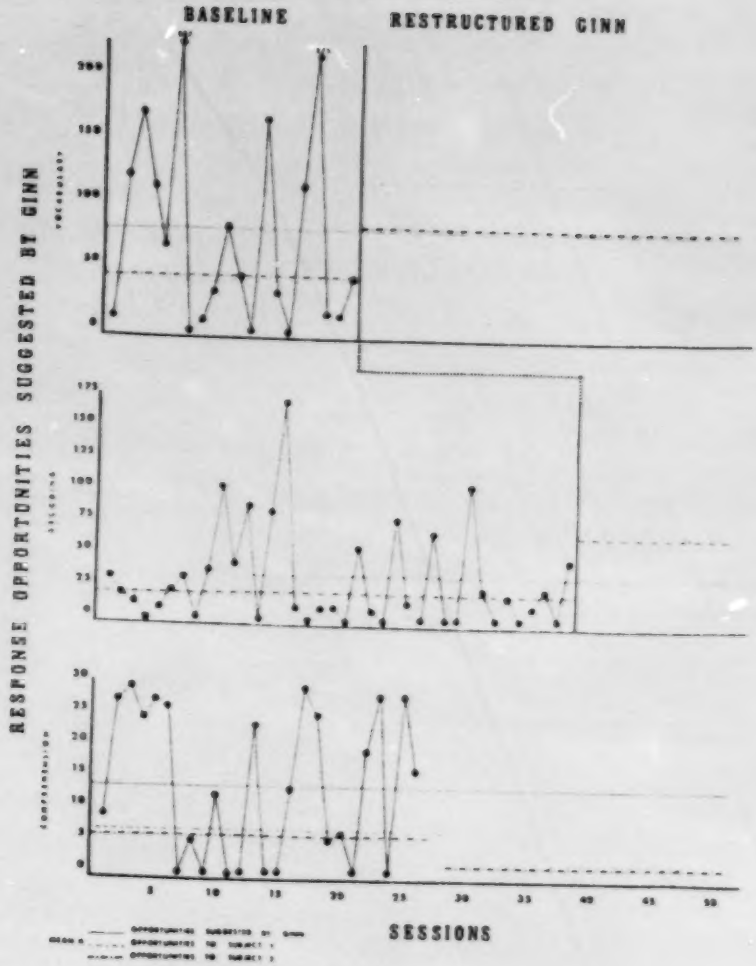

Figure 2. A record of the number of response opportunities suggested by the Ginn 720 teacher's manual for three reading behaviors.

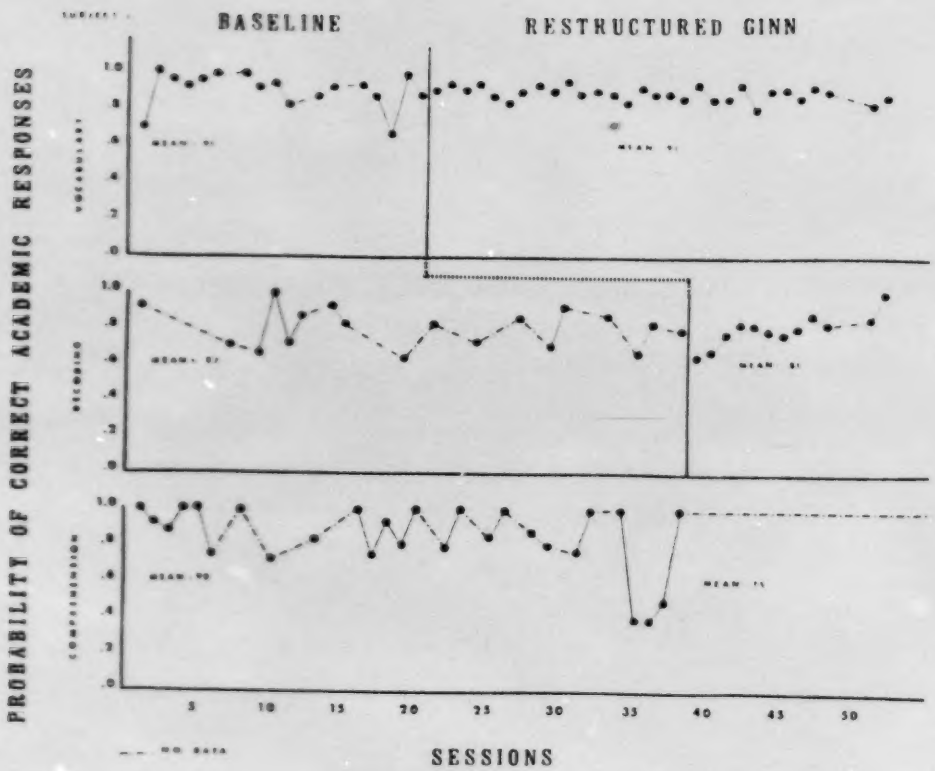

Figure 3. Subject 1's record of probability scores for correct responding during baseline and treatment phases.

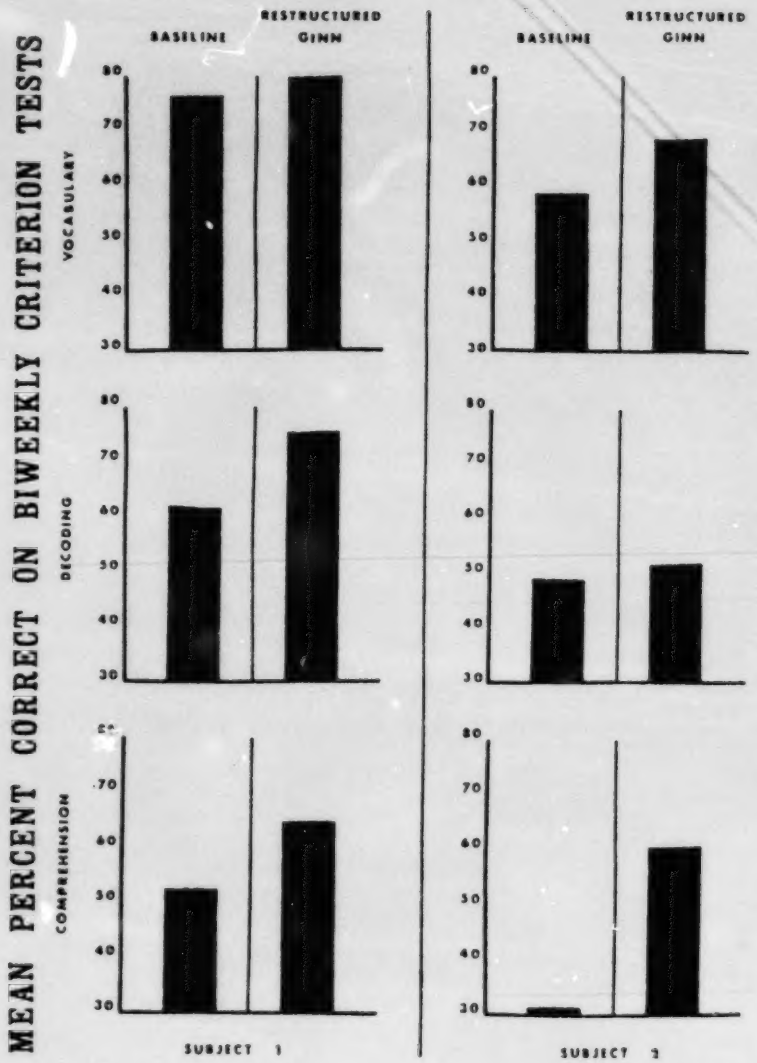

Figure 4. Mean percent correct for Subject 1 and Subject 2 on biweekly criterion tests during baseline and treatment phases.